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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/620,469	07/20/2000	Du-seop Yoon	1293.1132/MDS	3077

7590 04/23/2002  
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EXAMINER

ANGEBRANNDT, MARTIN J

ART UNIT	PAPER NUMBER
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1756

DATE MAILED: 04/23/2002

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Please find below and/or attached an Office communication concerning this application or proceeding.

AS-8

<b>Office Action Summary</b>	Application No.	Applicant(s)	
	09/620,469	YOON ET AL.	
	Examiner	Art Unit	
	Martin J Angebrannndt	1756	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 26 February 2002.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-3,5,6,8-11 and 13-21 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3,5,6,8-11 and 13-21 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All   b) ☐ Some \*   c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                             | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____  |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)         | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: _____                                    |

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1. The response provided by the applicant has been read and given careful consideration.

Responses to the arguments and amendments of the applicant are presented after the first rejection to which they are directed.

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claims rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claims 5, 8, 11, 13 and 15, the term "family" renders the scope of coverage sought unclear as it is not clear if they must have these elements in the layer or if family members merely need to exhibit a similar physical characteristic such as crystal structure or the like.

The response by the applicant would be fine if the property shared by the members of the family was clear for the record. The current terminology leaves this open and as such is indefinite as there is no clear definition of what the family might comprise. The applicant points to valence, solubility and behavior of with respect to reagents as possibilities. The rejection stands. The examiner notes that if the property is the ability to phase change, then claims 11 and 15 do not further limit the coverage as the claim already embraces all phase change recording layer materials as would family as argued by the applicant.

4. Claim 8, 11 and 15 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to

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cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form.

Claim 8 merely restates the limitations of claim 5.

Claims 11 and 15 if the term family is held to embrace all phase change recording materials fails to further modify the claims upon which they depend as these are already embraced.

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 1,2,7,9,11,13-15 and 17-21 are rejected under 35 U.S.C. 102(b) as being fully anticipated by Coombs et al. '003.

Example 2 describes a grooved substrate coated with a tantalum oxide layer, a gold layer, a tantalum oxide layer, a GeTeSe phase change recording layer, a tantalum oxide layer a reflective layer and a UV cured protective layer. (8/10-34). The use of other dielectric materials, such as silicon dioxide, titanium dioxide, zinc sulfide, aluminum nitride, tantalum oxide and

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mixtures therefore, is disclosed. (5/29-35) Useful materials for the reflective layer including Au, Al, Cu, or Ag are disclosed. (5/14-20)

The examiner notes that as discussed in claims 5, 13 and 8, gold acts as a phase control layer and notes that the specification and claims assert that gold acts as a phase control layer without any particular description of the gold layer. The examiner holds that gold inherently acts as a phase control layer within the terms of the specification. The examiner also notes that the claims are to the medium itself and not to the process of use, therefore, the property need not be demonstrated to meet the claims. The differences in phase resulting from areas of differing intensity of exposure. The rejection of claims 11 and 15 assumes that the broad definition argued by the applicant stands. The rejection stands.

8. Claims 1, 2, 9-11, and 13-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Coombs et al. '003.

The examiner holds that it would have been obvious to one skilled in the art to modify example 2 cited by using other disclosed dielectric materials in place of the tantalum oxide with a reasonable expectation of achieving comparable results based upon disclosed equivalent function.

9. Claims 1, 2, 9-11 and 13-21 are rejected under 35 U.S.C. 102(b) as being fully anticipated by Tominaga et al. '517.

Example 1 uses a polycarbonate substrate, a zinc sulfide-silicon dioxide dielectric layer, a AgSbTeInV phase changing masking layer, a zinc sulfide-silicon dioxide dielectric layer, a AgSbTeInV phase changing masking layer, a zinc sulfide-silicon dioxide dielectric layer, a gold

layer and a UV cured protective layer. Useful reflective layers are disclosed. (7/62+). The use of the phase change aspects of the masking layer is disclosed. (4/65-5/44).

The applicant's arguments neglects the fact that this is a well known phase change materials and that it acts as a masking layer as described in the specification on page 9 at lines 1-20. The applicant needs to specifically recite the areas which are at zero phase difference and which are at 180 degrees difference for the argument to be persuasive as the current claim language allows either the center portion or the outer region to exhibit the phase change. Moreover, this may only occur only for certain laser powers as the masking layer is disclosed as able to assume an amorphous phase in column 9 at lines 1-5 and 64-66. The rejection stands.

10. Claims 1 and 13-21 are rejected under 35 U.S.C. 102(b) as being fully anticipated by Ohno et al. '783.

Example 1 has a substrate, coated a zinc sulfide-silicon dioxide dielectric layer followed by alternating layers of GeTeSb phase change recording layer and dielectric materials until a final dielectric layer is formed and a reflective layer formed on that.

In response to the arguments of the applicant, the examiner notes that the GeSbTe recording materials are known to undergo phase change between amorphous and crystalline phases as evidenced by the language describing the phase change recording materials as having an amorphous state and a crystalline state in column 2 at lines 16-20. The examiner's position is that with respect to the references utilizing plural phase change recording layers, the phase change recording layer closest to the substrate acts as a phase control layer as the light used to record the other layer(s) must pass through it. Additionally, the applicant seeks coverage for this

embodiment as evidenced by claims 5,8 and 13. As above the examiner holds that this is inherent.

11. Claim 1,2,9-11 and 13-21 are rejected under 35 U.S.C. 102(b) as being fully anticipated by Kasami et al. 221.

The examples of figure 3 describes a polycarbonate substrate, a zinc sulfide-silicon dioxide dielectric layer, a SbSe phase change materials, a zinc sulfide-silicon dioxide dielectric layer, a UV cured spacer layer, a zinc sulfide-silicon dioxide dielectric layer, a SbTeGe recording layer, a zinc sulfide-silicon dioxide dielectric layer, a spacer layer, a zinc sulfide-silicon dioxide dielectric layer, a GeSbTe recording layer, a zinc sulfide-silicon dioxide dielectric layer, a reflective layer and a UV cured protective layer. (3/47-4/29).

In addition to the basis provided above, the examiner cites column 1/lines 17-54, 2/61-64 and 4/30-40 to support his position that the recording media of the prior art undergo transitions between the amorphous and crystalline states.

12. Claim 1,2, 9-11 and 13-21 are rejected under 35 U.S.C. 102(b) as being fully anticipated by Rosen et al. 188.

The examples of figure 3 describes a polycarbonate substrate, a zinc sulfide-silicon dioxide dielectric layer, a SbTeGe recording layer, a Si thermal dissipation layer, a silicon nitride dielectric layer, a spacer layer, a zinc sulfide or silicon dioxide dielectric layer, a GeSbTe recording layer, a zinc sulfide or silicon dioxide dielectric layer, a reflective layer and a protective layer. (9/15-10/15). The use of other recording layer materials is disclosed. (11/44-59).

In addition to the basis provided above, the examiner cites 1/31-49 to support his position that the recording media of the prior art undergo transitions between the amorphous and crystalline states. The rejection stands.

13. Claims 1,2,9-11 and 13-21 are rejected under 35 U.S.C. 102(b) as being fully anticipated by Miyauchi et al. JP 09-007224.

See figure 1 and description on page 10.

The rejection stands for the reasons above. (note GeTeSb recording layer)

14. Claims 1,2,9-11 and 13-21 are rejected under 35 U.S.C. 102(b) as being fully anticipated by Akahira et al. JP 03-157830.

The examples of figure 5 describes a polycarbonate substrate, a zinc sulfide dielectric layer, a SbTeGe recording layer, a zinc sulfide dielectric layer, a GeSbTe recording layer, a zinc sulfide dielectric layer, a reflective layer and a UV cured protective layer. (page 6/lower left column/example 1).

The rejection stands for the reasons above. (note GeTeSb recording layer)

15. Claims 1-3,5,6,8-11 and 13-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over either Coombs et al. '003, Tominaga et al. '517, Akahira et al. JP 03-157830, Rosen et al. 188, Kasami et al. 221 or Miyauchi et al. JP 09-007224, in view of Tsukagoki et al. '014.

Tsukagoki et al. '014 discloses adding a dielectric layer between the reflective layer and the UV cured layer in phase change optical recording media. (18/35-47)

It would have been obvious to one skilled in the art to added a dielectric layer between the reflective layer and the protective layer of either Coombs et al. '003, Tominaga et al. '517, Akahira et al. JP 03-157830, Rosen et al. 188, Kasami et al. 221 or Miyauchi et al. JP 09-007224



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as this is known in the art as evidenced by Tsukagoki et al. '014 with the advantage of increasing the resistance of the resultant medium to mechanical damage.

The rejection stands for the reasons above.

16. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

17. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Martin J Angebrannndt whose telephone number is 703-308-4397. The examiner can normally be reached on Mondays-Thursday and alternative Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Huff can be reached on 703-308-2464.

The fax phone numbers for the organization where this application or proceeding is assigned are 703-872 9310 for regular communications and 703-872 9311 for After Final communications.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

A handwritten signature in black ink, appearing to read 'Martin J. Angebranndt', written in a cursive style.

Martin J Angebranndt  
Primary Examiner  
Art Unit 1756

April 22, 2002